

disclosure described herein are capable of operation in other sequences and/or arrangements than are described or illustrated herein.

What is claimed is:

1. A peristaltic pump, comprising:
  - a plunger cam;
  - a plunger-cam follower configured to engage the plunger cam to follow the plunger cam and to disengage from the plunger cam, whereby the plunger-cam follower does not follow the plunger cam when disengaged from the plunger cam;
  - a tube receiver configured to receive a tube;
  - a spring-biased plunger coupled to the plunger-cam follower;
  - a spring configured to bias the spring-biased plunger toward the tube receiver;
  - a position sensor configured to determine a position of the spring-biased plunger when the plunger-cam follower is disengaged from the plunger cam and the spring biases the spring-biased plunger against the tube; and
  - a processor coupled to the position sensor to receive the position of the spring-biased plunger, wherein the processor is configured to estimate fluid flow utilizing at least the position of the spring-biased plunger as indicated by the position sensor when the plunger-cam follower is disengaged from the plunger cam.
2. The peristaltic pump according to claim 1, further comprising an angle sensor operatively coupled to the plunger cam configured to determine an angle of rotation of the plunger cam.
3. The peristaltic pump according to claim 2, wherein the processor compares a first static region of the position sensor to a second static region of the position sensor to estimate the fluid flow.
4. The peristaltic pump according to claim 3, wherein the processor determines the first static region by identifying the first static region within a predetermined range of angles as indicated by the angle sensor.
5. The peristaltic pump according to claim 4, wherein the processor determines the second static region by identifying the second static region within a second predetermined range of angles as indicated by the angle sensor.
6. The peristaltic pump according to claim 3, wherein the processor determines the first and second static regions by measuring the position sensor at predetermined angles as indicated by the angle sensor.
7. The peristaltic pump according to claim 1, wherein the processor compares a first static region measured by the position sensor to a second static region measured by the position sensor to estimate the fluid flow.
8. The peristaltic pump according to claim 6, wherein the processor is configured to determine the first static region by identifying a peak movement of the spring-biased plunger as measured by the position sensor and identifies the second static region to be after the peak movement.
9. The peristaltic pump according to claim 6, wherein the processor determines the second static region by identifying an end of the first static region.

10. A peristaltic pump, comprising:

- an inlet valve;
- an outlet valve;
- a plunger cam;
- a plunger-cam follower configured to engage the plunger cam and to disengage from the plunger cam, whereby the plunger-cam follower does not follow the plunger cam when disengaged from the plunger cam;
- a tube receiver configured to receive a tube;
- a spring-biased plunger coupled to the plunger-cam follower;
- a spring configured to bias the spring-biased plunger toward the tube receiver;
- a position sensor operatively coupled to the spring-biased plunger, wherein the position sensor is configured to determine a position of the spring-biased plunger when: the plunger-cam follower is disengaged from the plunger cam, the spring biases the spring-biased plunger toward the tube, and the inlet and outlet valves are closed; and
- a processor coupled to the position sensor to receive the position of the spring-biased plunger and to estimate fluid flow utilizing at least the position of the spring-biased plunger.

11. The peristaltic pump according to claim 10, further comprising an angle sensor operatively coupled to the plunger cam configured to determine an angle of rotation of the plunger cam.

12. The peristaltic pump according to claim 11, wherein the processor compares a first static region of the position sensor to a second static region of the position sensor to estimate the fluid flow.

13. The peristaltic pump according to claim 12, wherein the processor determines the first static region by identifying the first static region within a predetermined range of angles as indicated by the angle sensor.

14. The peristaltic pump according to claim 13, wherein the processor determines the second static region by identifying the second static region within a second predetermined range of angles as indicated by the angle sensor.

15. The peristaltic pump according to claim 12, wherein the processor determines the first and second static regions by measuring the position sensor at predetermined angles as indicated by the angle sensor.

16. The peristaltic pump according to claim 10, wherein the processor compares a first static region measured by the position sensor to a second static region measured by the position sensor to estimate the fluid flow.

17. The peristaltic pump according to claim 15, wherein the processor is configured to determine the first static region by identifying a peak movement of the spring-biased plunger as measured by the position sensor and identifies the second static region to be after the peak movement.

18. The peristaltic pump according to claim 15, wherein the processor determines the second static region by identifying an end of the first static region.

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